

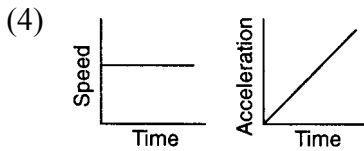
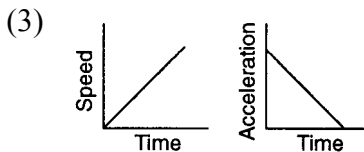
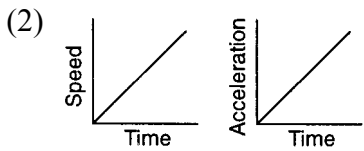
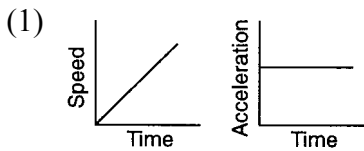
1. An object accelerates uniformly from rest to a speed of 50. meters per second in 5.0 seconds. The average speed of the object during the 5.0-second interval is

- (1) 5.0 m/s (3) 25 m/s
 (2) 10. m/s (4) 50. m/s

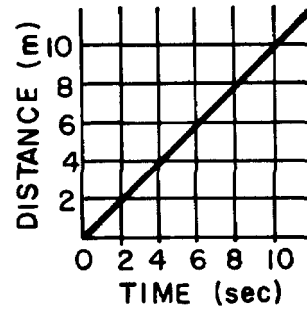
2. A car, starting from rest, accelerates at 4.0 m/s^2 . What is its velocity at the end of 8.0 seconds?

- (1) 0.50 m/s (3) 16 m/s
 (2) 2.0 m/s (4) 32 m/s

3. Which two graphs best represent the motion of an object falling freely from rest near Earth's surface?



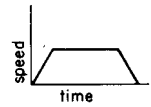
4. The graph below shows the distance traveled by an object plotted against time.



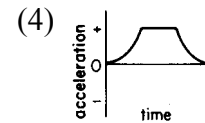
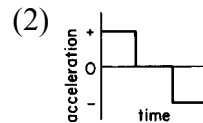
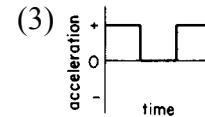
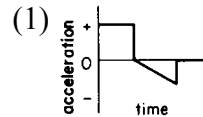
What is the distance covered by the object between the 2nd and 6th second?

- (1) 8 m (3) 6 m
 (2) 2 m (4) 4 m

5. The speed-time graph shown on the right represents the motion of an object.



Which graph best represents the relationship between acceleration and time for this object?



6. Momentum may be expressed in

- (1) joules (3) kg-m/s
 (2) watts (4) N-m

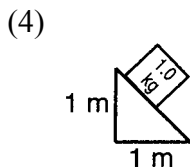
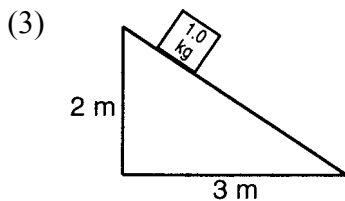
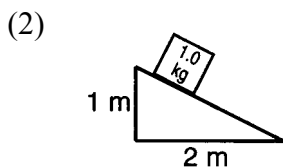
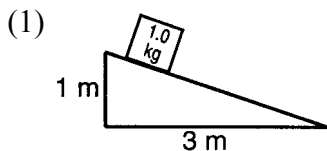
7. As the unbalanced force applied to an object increases, the time rate of change of the object's momentum

- (1) decreases (3) remains the same
 (2) increases

8. An object with a mass of 0.5 kilogram starts from rest and achieves a maximum speed of 20 meters per second in 0.01 second. What average unbalanced force accelerates this object?

- (1) 1,000 N (3) 0.1 N
 (2) 10 N (4) 0.001 N

9. A 1.0-kilogram block is placed on each of four frictionless planes inclined at different angles. On which inclined plane will the acceleration of the block be greatest?



10. Two bodies attract each other with a gravitational force of 10.0 Newtons. What will be the force of attraction if the mass of each body is doubled?

- (1) 5 N (3) 20 N
 (2) 10 N (4) 40 N

11. Which property of an object *must* double in order to double its weight?

- (1) kinetic energy (3) momentum
 (2) mass (4) velocity

12. A constant unbalanced force of friction acts on a 15.0-kilogram mass moving along a horizontal surface at 10.0 meters per second. If the mass is brought to rest in 1.50 seconds, what is the magnitude of the force of friction?

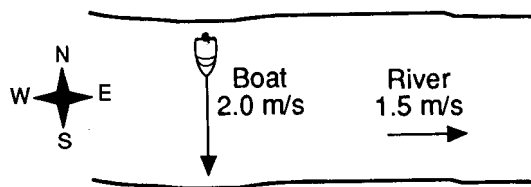
- (1) 10.0 N (3) 147 N
 (2) 100 N (4) 150. N

13. Which vector best represents the resultant of forces F_1 and F_2 acting concurrently on point P as shown in the diagram to the right?



- (1) (3)
 (2) (4)

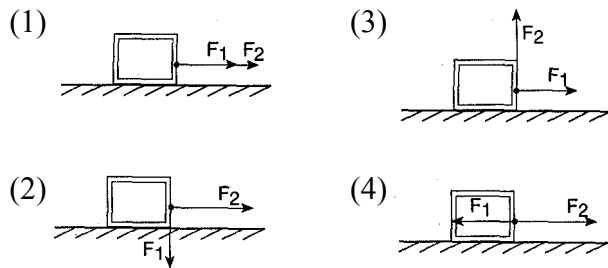
14. A river flows due east at 1.5 meters per second. A motorboat leaves the north shore of the river and heads due south at 2.0 meters per second, as shown in the diagram below.



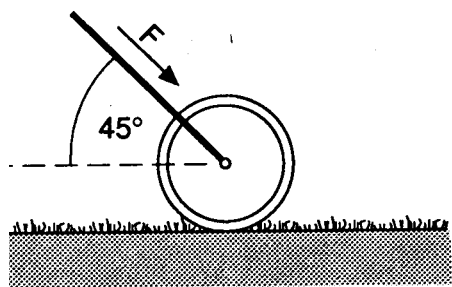
Which vector best represents the resultant velocity of the boat relative to the riverbank?

- (1) (3)
 (2) (4)

15. A 150.-newton force, F_1 , and a 200.-newton force, F_2 , are applied simultaneously to the same point on a large crate resting on a frictionless, horizontal surface. Which diagram shows the forces positioned to give the crate the greatest acceleration?



16. The handle of a lawn roller is held at 45° from the horizontal. A force, F , of 28.0 Newtons is applied to the handle as the roller is pushed across a level lawn, as shown in the diagram below.



What is the magnitude of the force moving the roller forward?

- (1) 7.00 N (3) 19.8 N
 (2) 14.0 N (4) 39.0 N

Answer Key

1. 3

2. 4

3. 1

4. 4

5. 2

6. 3

7. 2

8. 1

9. 4

10. 4

11. 2

12. 2

13. 3

14. 4

15. 1

16. 3
